

We claim:

- 1 1. A mounting system, comprising:
  - 2 a backplate for positioning beneath a processor package on a motherboard, the
  - 3 backplate having a plurality of pins extending upward from and transverse to the
  - 4 backplate, the pins each including a tip; and
  - 5 a linkage assembly disposed upon a heatsink assembly, the heatsink assembly
  - 6 comprising a base portion, the linkage assembly comprising:
    - 7 a first rod disposed transverse to a first pressure block and a second
    - 8 pressure block;
    - 9 a second rod disposed transverse to a third pressure block and a fourth
    - 10 pressure block, wherein the first, second, third, and fourth pressure blocks are
    - 11 permanently affixed to the base portion of the heatsink assembly;
    - 12 a pair of scoops, a first scoop being threaded through and transverse to
    - 13 the first rod, a second scoop being threaded through and transverse to the second rod,
    - 14 each scoop including a pair of claws for grasping the tip of the pins; and
    - 15 a ratchet assembly for coupling the linkage assembly with the backplate;
    - 16 wherein the claws securely grasp the tip of the pins such that the heatsink assembly is
    - 17 pulled toward the package while the backplate provides an opposing force to the
    - 18 heatsink assembly.
- 1 2. The mounting system of claim 1, wherein the pins of the backplate are threaded
- 3 through holes in the motherboard as well as through holes in the base portion of the
- 4 heatsink assembly.
- 1 3. The mounting system of claim 2, the ratchet assembly further comprising:
  - 2 a ratchet handle including an end member with gear teeth, the end member
  - 3 being cylindrical, wherein the end member is threaded through the first rod;
  - 4 a secondary ratchet handle including a cylindrical end portion, for threading
  - 5 through the second rod;

6        a ratchet bar coupled between the ratchet handle and the secondary ratchet  
7 handle such that, when the ratchet handle is moved, the secondary ratchet handle  
8 moves such that the ratchet handles are substantially parallel to one another; and

9        a ratchet gear threaded through the first rod, the ratchet gear being adjacent to  
10 the end member of the ratchet handle, the ratchet gear having teeth which face the  
11 gear teeth of the end member.

1    4.    The mounting system of claim 3, wherein the teeth and the gear teeth make a  
2 clicking noise when the mounting system is fully engaged.

1    5.    The mounting system of claim 3, the ratchet assembly further comprising a latch  
2 for inhibiting movement of the ratchet assembly once the mounting system is fully  
3 engaged.

1    6.    The mounting system of claim 1, the plurality of pins further comprising:  
2        a channel disposed beneath the tip, the channel having a channel diameter and  
3 the tip having a tip diameter, wherein the channel diameter is smaller than the tip  
4 diameter.

1    7.    The mounting system of claim 6, wherein the heatsink assembly further  
2 comprises a heatsink body, the heatsink body having a width smaller than the base  
3 portion.

1    8.    The mounting system of claim 7, further comprising:  
2        a second pair of scoops, a third scoop being threaded through and transverse to  
3 the first rod, a fourth scoop being threaded through and transverse to the second rod,  
4 wherein the scoops are approximately adjacent to each corner of the heatsink body.

1    9.    The mounting system of claim 7, wherein the pressure blocks are adjacent to the  
2 heatsink body.

1 10. The mounting system of claim 1, wherein the scoops are ramped so that, during  
2 engagement with the pins, a force applied to the processor package is low.

1 11. The mounting system of claim 3, further comprising:  
2 a bolt disposed at one end of the first rod; and  
3 a ratchet spring, disposed between the bolt and the end member of the ratchet  
4 handle;  
5 wherein the ratchet spring provides a force parallel to the first rod, such that the teeth  
6 of the end member and the gear teeth remain substantially coupled.

1 12. The mounting system of claim 1, further comprising a reverse stop coupled to  
2 and transverse to the pair of claws, the reverse stop being substantially parallel to the  
3 first rod, wherein the reverse stop makes contact with the first pressure block when the  
4 mounting system is fully engaged.

1 13. The mounting system of claim 12, wherein the reverse stop makes contact with  
2 the first pressure block when the mounting system is fully disengaged.

1 14. The mounting system of claim 7, the base portion of the heatsink assembly  
2 further comprising a cavity such that the heatsink body is directly coupled to the  
3 processor package when the mounting system is fully engaged.

1 15. The mounting system of claim 11, further comprising:  
2 a second ratchet gear threaded through the second rod, the second ratchet gear  
3 having teeth and being adjacent to a secondary ratchet handle end member, wherein  
4 the secondary ratchet handle end member includes gear teeth which face the teeth of  
5 the second ratchet gear.

1 16. The mounting system of claim 15, further comprising:

2           a second bolt disposed at one end of the second rod; and  
3           a second ratchet spring, disposed between the second bolt and the secondary  
4       ratchet handle end member;  
5       wherein the second ratchet spring provides a force parallel to the second rod, such that  
6       the teeth of the secondary ratchet handle end member and the gear teeth remain  
7       substantially coupled.

1       17. A method, comprising:  
2           positioning a backplate beneath a printed circuit board, the printed circuit board  
3       having a processor package mounted thereon, the backplate being directly beneath the  
4       processor package, the backplate including transversely disposed pins, wherein the pins  
5       are threaded through holes in the printed circuit board;  
6           affixing a linkage assembly atop a base portion of a heatsink assembly, the  
7       linkage assembly comprising a structural assembly and a ratchet assembly, wherein the  
8       structural assembly surrounds a heatsink body mounted on the base portion, the  
9       structural assembly comprising first and second rods with scoops attached thereon,  
10      wherein the rods are threaded through blocks, the blocks being affixed to the base  
11      portion;  
12      threading the pins through secondary holes in the base portion of the heatsink  
13      assembly; and  
14      engaging the ratchet assembly, the ratchet assembly comprising a ratchet handle  
15      for rotating the first and second rods, wherein the scoops grasp the rods such that the  
16      heatsink body is securely and evenly coupled to the processor package.

1       18. The method of claim 17, further comprising:  
2           ceasing movement of the ratchet assembly when a clicking noise is heard, the  
3       clicking noise resulting from contact between gear teeth located on an end of the  
4       ratchet handle and teeth located on a ratchet gear, the ratchet gear being disposed  
5       adjacent to the end of the ratchet handle with its teeth facing the gear teeth.

1 19. The method of claim 18, further comprising:  
2 engaging a latch to inhibit further movement of the ratchet assembly.

1 20. The method of claim 17, further comprising:  
2 disengaging the ratchet assembly without use of a tool; and  
3 removing the heatsink assembly from the printed circuit board.

1 21. A mounting system, comprising:  
2 a backplate for positioning beneath a processor package on a motherboard, the  
3 backplate having a plurality of pins extending upward from and transverse to the  
4 backplate; and  
5 a linkage assembly disposed upon a heatsink assembly, the heatsink assembly  
6 comprising a base portion and having a predetermined weight, the linkage assembly  
7 comprising:  
8 a first rod disposed transverse to a first pressure block and a second  
9 pressure block;  
10 a second rod disposed transverse to a third pressure block and a fourth  
11 pressure block, wherein the first, second, third, and fourth pressure blocks are  
12 permanently affixed to the base portion of the heatsink assembly;  
13 a pair of scoops, a first scoop being threaded through and transverse to  
14 the first rod, a second scoop being threaded through and transverse to the second rod;  
15 and  
16 a ratchet assembly for coupling the linkage assembly with the backplate;  
17 wherein the predetermined weight of the heatsink assembly is absorbed by the  
18 mounting pins and backplate when the mounting assembly is fully engaged.

1 22. The mounting system of claim 21, the ratchet assembly further comprising:  
2 a ratchet handle including an end member with gear teeth, the end member  
3 being cylindrical, wherein the end member is threaded through the first rod; and

4           a ratchet gear threaded through the first rod, the ratchet gear being adjacent to  
5   the end member of the ratchet handle, the ratchet gear having teeth which face the  
6   gear teeth of the end member.

1   23.   The mounting system of claim 22, wherein the teeth and the gear teeth make a  
2   clicking noise when the mounting system is fully engaged.

1   24.   The mounting system of claim 23, the ratchet assembly further comprising:  
2        a secondary ratchet handle including a cylindrical end portion, for threading  
3   through the second rod;  
4        a ratchet bar coupled between the ratchet handle and the secondary ratchet  
5   handle such that, when the ratchet handle is moved, the secondary ratchet handle  
6   moves such that the ratchet handles are substantially parallel to one another; and  
7        a latch for inhibiting movement of the ratchet assembly once the mounting  
8   system is fully engaged.

1   25.   The mounting system of claim 21, further comprising:  
2        a second pair of scoops, a third scoop being threaded through and transverse to  
3   the first rod, a fourth scoop being threaded through and transverse to the second rod,  
4   wherein the scoops are ramped so that, during engagement with the pins, a force  
5   applied to the processor package is low.

1   26.   The mounting system of claim 22, further comprising:  
2        a bolt disposed at one end of the first rod; and  
3        a ratchet spring, disposed between the bolt and the end member of the ratchet  
4   handle;  
5   wherein the ratchet spring provides a force parallel to the first rod, such that the teeth  
6   of the end member and the gear teeth remain substantially coupled.